THE PLANT DISEASE BULLETIN

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THE PLANT DISEASE BULLETIN

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THE PLANT DISEASE SURVEY

Vol. V. September 1, 1921. Number 5

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Plant disease situation in England in 1921 reported by Dr. A. D. Cotton. (Page 71).

Special reports of collaborators on clover diseases reported in this issue. (Page 74).

Brown patch disease of turf caused by Rhizoctonia reported by Piper and Oakley. (Page 76). Collaborators and others are urged to make observations on this disease and report occurrences to this office.

Late blight of potato appearing to some extent in the Appalachian Mountain region from North Carolina to southern New York, but in general it does not seem to be menacing owing to the hot dry season. (Page 77).

More peanut rust in Florida reported by collaborator O. F. Burger. (Page 88).

PLANT DISEASES IN ENGLAND - 1921

The following interesting report of plant disease conditions in the British Isles this year has been received from Dr. A. D. Cotton, Mycologist with the Ministry of Agriculture and Fisheries of Great Britian, July 28, 1921. Collaborators will note that the conditions he reports are not unlike those that we are experiencing in the United States this season.

> "This season we have had a very unusual drought, having had no general rain since about May 1 and only a very short allowance since February. As a result certain fungi have not put in an appearance at all, the weather either being too dry for them to flourish or the crops ripening off suddenly before they effected a footing. In cereals, for instance, Yellow Rust was bad in April and May, but our late rusts, P. triticina and P. simplex (on barley) hardly showed at all. Our Black Rust outbreak in Wales will probably also be slight, as crops everywhere are ripening fast. In fruit the very slight amount of apple Scab is striking and many vegetables have died off prematurely and practically no plants or seeds have been set out since June.
>
> "In potatoes we have had no records at all of Blight (last year it commenced in April) and as for Wart disease the soil seems too hot and dry for it to show up in the immunity tests at Ormskirk."

CEREAL AND FORAGE CROPS.

OATS

The yield and quality of oats this year was low in most states. The August forcast indicates a production of only 1,137,000,000 bushels as compared with 1,433,000,000 bushels, the 1915-19 average. The condition on that date was reported as 64.5% while the August 10-year average is 81.6%. Drought and heat are said to be responsible for the deterioration.

Smut caused by Ustilago avenae and U. levis.

Vermont: The county agent made a survey of 52 fields in this, Chittenden County, and found that on native seed, the smut this year was a little less than last, being 2-3%, while on western grown seed it was between 5 and 10% with one maximum of about 20%. He is starting a campaign for homegrown seed. What happens to smut in our Vermont winters? Suggestion to others in the north. Oats all harvested by August 10. (Lutman, August 1).

Massachusetts: About the usual amount. (Osmun, August 15).

Connecticut: No complaint. Probably the usual amount. (Clinton, August 15).

Delaware: June 11, common in all fields. (Adams, July 15).

Pennsylvania: Counts of 163 fields in the following counties show less than 1%: Blair, Cambria, Carbon, Center, Cumberland, Dauphin, Franklin, Schuykill, York, Union. Seed treatment for oat smut is quite generally practiced. (Thurston, August 15).

Ohio: Smut has been rather less evident than in the average season and this appears to be referable to more general treatment of seed oats to prevent smut. The failure of the oat crop to develop normally has caused great disappointment to oat growers and probably has led to reduced attention to disease in the crop. (Selby, August 15).

Wisconsin: Less than usual. Highest amount seed was in Adams County, 14%. (Vaughan, August 15).

North Dakota: Loose smut not abundant this year, only found evidence in the head in special fields. This probably due to intense hot weather at heading time. (Bolley, August 15).

South Dakota: Slight damage. Present in 10% of fields. (Evans, August 15).

Colorado: Both of these smuts are prevalent over the state, but the loose is most prevalent. Some fields were seen where the damage would be about 3%, and from that to just a trace. (Learn, July 15).

Stem rust caused by Puccinia graminis.

Vermont: Much less than I have ever seen here. Hardly 5-10% on the rust scale. The very dry weather of the entire growing season seems to have prevented all but a very slight infection. In other parts of the state there is probably more, but the rain this summer has been in the form of heavy showers instead of long rains, so I should expect that the infection from rusts is light over the entire state. (Lutman, August 1).

Florida: The rust of oats was especially prevalent in the northern part of the state. The spring was hot and dry. (Burger, July 1).

Wisconsin: Crown rust and black stem rust were both more prevalent than usual this year. Losses were considerable, especially on late planted fields. The losses from rusts were closely associated with hot weather injury.

South Dakota: In practically every field. Damage 5% in state. (Evans, August 15).

Colorado: No report has been received thus far and the "barberry scouts" inform me they have not found it on oats in a single instance. (Learn, July 15).

Blast (cause undetermined).

North Dakota: Rather uniformly distributed throughout the state this year. Evidence is rather good that it is associated with intensily hot weather just at the period when the oat is being pollinated in the sheath. No definite indication of specific disease. (Bolley, August 15).

Wisconsin: The hot weather of late June and early July was an important factor in knocking out the Wisconsin oat crop. Many fields have been cut for hay and all grain is very light. (Vaughan, August 15).

Ohio: Drouth injury and break down has been the most conspicuous feature of oat seedings in Ohio for 1921. The crop estimate for the season shows very disappointing return and the yields are so low that the grain is light and unsatisfactory. (Selby, August 15).

BARLEY

Loose and covered smuts caused by Ustilago nuda and U. hordei.

Table 1. Occurrence of loose and covered smuts of barley as reported by collaborators August 1.

State	Collaborator	Loose smut	Covered smut
Illinois	Geo. H. Dungan	Trace	Trace
Wisconsin	R. E. Vaughan	Less than usual	Less than usual.
South Dakota	A. T. Evans	1% damage	Slight.
Colorado	C. D. Learn	Not serious	Several reports.
Idaho	C. W. Hungerford		Trace
Washington	F. D. Heald	No records of occurrence	As usual

Stem rust caused by Puccinia graminis.

New York: Infection considerably heavier than on wheat. (Kirby, August 1).
Illinois: About 5%. (Dungan, August 1).
Wisconsin: Widespread; destructive on some late planted fields. (Vaughan, August 1).
South Dakota: Common; 2% damage. (Evans, August 1).

Stripe caused by Helminthosporium gramineum.

Illinois: Not known to what extent stripe occurred in northern Illinois in 1921, but this disease was present on one variety at the Urbana Station this summer. It is safe to mark "trace" for this disease, in absence of more information. (Dungan, August 1).
Wisconsin: Only a trace found. Much less than usual. (Vaughan, August 1).
South Dakota: Fairly common; 2% loss. (Evans, August 1).
Colorado: This was found in several fields, but in no case was it serious. A strain has been developed at the station which is the most susceptible variety they have. (Learn, August 1).
Montana: More or less infection in nearly all fields. No economic damage. (Jennison, August 1).
Idaho: Trace to 1% found in a few fields of irrigated barley. (Hungerford, August 1).

Scald caused by Rhynchosporium graminicola.

Idaho: Scald was bad on Wisconsin No. 579 on the College Farm, at Moscow. Comparative infection of four varieties as follows: Wisconsin No. 579 65%, Tennessee Winter 15%, Michigan Winter 15%, and White Winter 15%. (Hungerford, August 1).

Climatic injury.

Wisconsin: Hot dry weather very destructive. Grain did not mature well. (Vaughan, August 1).

RED CLOVER

A number of collaborators have reported on the red clover disease situation this year and some of these reports, which are given below, indicate that diseases are rather important in the failure of this crop. Readers are asked to make further contributions concerning the diseases of this important hay and rotation crop.

The Red Clover Situation in Pennsylvania.

"The red clover crop has generally been a failure in Pennsylvania this year. Thousands of acres were frozen during the early freeze which also hit the fruit crop severely. In general the eastern part of the state was most severely hit, the western part next hardest, and the mountainous section running from the northeast to southwest through the center of the state, is least affected though many fields were failures even in this district. Alfalfa also suffered severely and crimson clover wherever it is grown. White clover proved hardy.

"This is the first time in my connection with Pennsylvania (nine years) that red clover has been seriously damaged by frost. It is quite evident that the weather in April brought the clover along too rapidly and made it susceptible to the freezes in May. So far as we can determine diseases did not play any important part in this year's loss to this crop.

"Generally speaking the diseases of red clover are moderately destructive in Pennsylvania. Anthracnose (Gloeosporium caulivorum) is usually present in most fields and it is not uncommon to find it killing the stems of 5% of the plants. Sooty-fungus (Polythrincum) is always present but apparently does not cause serious loss. Leaf-spot (Pseudopeziza) is also generally prevalent and may cause 1-2% loss. Root rots have not been serious, though Sclerotinia trifoliorum has been found locally in the state. The large-leaf spot (Macrosporium sarciniforme) is quite generally prevalent but I do not think it is very destructive as a rule. Mosaic may be serious at times. It was especially prevalent in 1920. I have not noted as much of it this season." C. R. Orton.

Root rot in Ohio.

"Root rot has been reported as causing severe loss in that part of Ohio immediately to the southeast of Columbus. The men state that whole fields have died out, the trouble being most noticed at cutting time and after. Plants affected have the roots rotted entirely away.

"Control measures have not been worked out, but it has been observed that mammoth and alsike clover are much less affected than is red clover." E. E. Clayton.

Clover Diseases in North Carolina.

"Clover, like many of the other crops in the state, was severely damaged early in the spring by several killing frosts and for that reason the information herein given must be based on these conditions; namely, stunted plants damaged by frost, and a cold damp season followed by frequent rains.

"Red clover is the principal legume hay crop of the mountain and Piedmont section of the state; red clover being more common in the mountains and crimson clover in the Piedmont section. In the eastern counties the soy bean replaces the clover to a certain extent, also does the peanut.

"Diseases certainly play an important part in failure of the clover, but evidently crimson clover is more susceptible to diseases than red clover. It may be possible tho that we have received more complaints of injury to crimson than red clover since we are nearer to the crimson clover section. I should say that by far the most destructive disease of both red and crimson clover is the Sclerotinia wilt, this being reported from nearly every section of the state where clover is grown. It is also destructive to alfalfa. Occasionally Sclerotium wilt is reported on clover; also on peanuts and soy beans.

"Estimates of loss in individual instances have been noted and Sclerotinia wilt has frequently caused the grower to abandon the growing of clover and alfalfa. On the Station farm near West Raleigh, there is one such field which was cropped to clover continually for several years until the wilt caused its death every year and the growth of clover was discontinued. In another instance a field of clover and alfalfa in Durham County was so badly infested with Sclerotinia wilt it was grown to other crops.

"Anthracnose (Colletotrichum trifolii) and Pseudopeziza trifolii leaf spots are not considered to be destructive in this state. The two most common and destructive leaf spots are rust (Uromyces trifolii), and sooty spot (Polythrincium trifoliorum). These two diseases are very common over the entire state, and especially on red clover, one causing about as much damage as the other." H. C. Foster.

Diseases of Red Clover in Louisiana.

"The red clover is not a very important crop in Louisiana. This is due to the fact that it has to be grown as an annual. It dies out during the hot summer months. How much of this dying out is due to various root rots has never been determined. There is reason to suspect that Rhizoctonia and possibly other fungi have something to do with this. Sclerotinia trifoliorum has never been reported in Louisiana.

"There are various leaf spots which have not been investigated very closely. From general observations, it would appear that a Macrosporium is the most common and most serious. It is not uncommon to see the plants badly defoliated by these. The clover rust occurs occasionally, but is not very important. I have not seen Pseudopeziza trifolii to recognize it in this state.

"The anthracnoses are not common. The legume anthracnoses need working over. There are a number of these forms which to me seem different. They occur on Melilotus and bur clover and may go to the red clover where this plant is grown on any scale." C. W. Edgerton.

GRASSES

Brown patch of turf caused by Rhizoctonia solani.

A disease of grass especially destructive in lawns and golf courses has been studied and recently described by C. V. Piper and R. A. Oakley, Office of Forage Crop Investigations (Piper, C. V. and Oakley, R. A. The brown patch fungus disease. Golf Illustrated, Vol. 11. December 1918. Piper, C. V. and Coe, H. S. Rhizoctonia in lawns and pastures. Phytopath. 9: 89-92. February 1919. Piper, C. V. and Oakley, R. A. The brown-patch disease of turf. Bull. Green Sect. U. S. Golf Assoc. 1: 112-115. June 1921).

The following note regarding the occurrence of the disease this year and giving data concerning the lawn plants affected has been furnished by the former of these two authors.

> "The brown-patch disease of turf caused by Rhizoctonia solani has been extremely abundant this year, first appearing at Washington about July 10, but at St. Louis it appeared in the end of May. On some golf courses whole putting greens have been turned brown by the disease. The lawn plants most seriously affected are species of bent (Agrostis), Yellow oat-grass (Trisetum flavescens), rough-stalked blue-grass (Poa trivialis), mouse-ear chickweed (Corastium), Veronica serpyllifolia, and red fescue (Festuca rubra). Immune species are white clover, Kentucky bluegrass, crab grass, and Bermuda grass."

In order that readers may have before them a short description of the disease an extract from the article referred to above in Golf Illustrated is here quoted. Reports of any observations that readers may make on this disease will be very much appreciated.

> "The "brown patch" disease of turf, frequently mistaken for "sun scald", occurs generally in lawns and pastures from Maine to Minnesota and south at least to Virginia. As the fungus is found on other plants all over the United States, it may be expected to occur generally in fine turf composed of susceptible grasses. The disease appears first in hot moist weather of summer and is most rampant when the weather is hot and muggy and on ground that is kept too moist by insufficient drainage or otherwise. The spots are at first more or less circular and grow in centrifugal fashipn, becoming a foot or more in diameter. In early morning many of the spots are covered with a fine mildew-like mycelium. Later in the day the border of actively growing spots is smoky green in color where the grass leaves are dying. When the disease is abundant and the spots merge, in very bad cases, a whole putting green will be completely brown and appear as if dead. With the advent of cool weather in fall most of the spots recover and the grass seems to have suffered no permanent injury. Occasional spots, however, are completely killed."

FRUIT CROPS

PEACH

Brown rot caused by Sclerotinia cinerea.

A few reports of damage from brown rot have been received from some of the northeastern states which have more or less of a crop this year in spite of the freezing weather of last spring.

Massachusetts: On the increase since the wet period of early August; rather serious. (Osmun, August 15).
Connecticut: More or less rotting of early varieties. At least an average year. (Clinton, August 15).
Pennsylvania: Appears to be severe again this year where there is any fruit. (Thurston, August 15).

VEGETABLE AND FIELD CROPS

POTATO

Late blight caused by Phytophthora infestans

The only states where blight of late potatoes has appeared thus far this season are North Carolina, West Virginia, Maryland, Pennsylvania, and New York in the East and California in the West. In these eastern states it is confined to the higher altitudes at the present time. In general, dry, hot weather has retarded and in some places killed out the fungus so that it is later and less prevalent than usual. With average weather during September the disease should not become serious except, perhaps, locally in parts of West Virginia and Pennsylvania where it is well established.

New York: (Bath, Steuben County) Late blight on potatoes was first observed on the edge of the field in which the dusting experiments are being carried on. No blight was observed on the experimental plots themselves. (K. H. Fernow, August 15).
Pennsylvania: Will be prevalent again this year on unsprayed fields of late potatoes except in southeastern part of state. Present now (August 20) in the following counties: Somerset, Elk, Fayette, Cambria, Center, Susquehana, Crawford, Lehigh, and Potter. (Thurston, August 1).
West Virginia: Prevalent upon late potatoes. Spraying experiments are already (August 15) showing very good control with home-made 5-5-50 Bordeaux. (Giddings, August 1).
Florida: The disease was present but on account of dry weather it did little damage. (Burger, July 1).
Washington: No reports have been received during the growing season but the disease is known to be present in the coast counties of western Washington. Specimens of late blight rot of tubers were received just before planting season. (Heald, August 1).

California: July 30 received specimens of plants affected severely with late blight from Humboldt County. About 400 acres of potatoes in this county of which about 150 are affected. It seems that this disease is found in Humboldt County region of the state and does not develop readily elsewhere. (Milbrath, August 1).

Early blight caused by Macrosporium solani.

Vermont: Common as an accompaniment or accomplice of tip-burn. Especially bad on early varieties but some fields of late varieties are almost dead from it. Quite an appreciable loss from it. (Lutman, August 27)
Massachusetts: Relatively little of this disease. Not as serious as usual. (Osmun, August 1).
Connecticut: No complaints yet. Collected or seen somewhat, but not serious in any case. (Clinton, August 1).
Delaware: Prevalent on early crops. Sprayed and dusted plants showed good control. Flea beetle very severe this season and early blight more prevalent on such plants. In many cases only about 70% growth of plants developed. (Adams, August 1).
Pennsylvania: Prevalent together with tip-burn, on early potatoes throughout the state and late potatoes in the eastern and southern sections. Loss in some sections heavy, particularly on unsprayed fields. (Thurston, August 1).
West Virginia: Quite general and more destructive than usual. Reported from Tucker County as causing serious loss. (Giddings, August 1).
Florida: This disease was present but did no severe damage. (Burger, July 1)
Wisconsin: Small amount this year, less than usual. Observed in a field of Green Mountains in Oneida County showing lower leaves one-fourth spotted. (Vaughan, August 1).
South Dakota: Common but did little damage. 10% in many fields. 2% damage. (Evans, August 1).
Idaho: Present in many fields but not serious. (Hungerford, August 1).
California: General throughout state. All plants affected slightly in southern California spring crop. In Delta region, general, all plants have spots on leaves. (Milbrath, August 1).

Mosaic (cause unknown).

Vermont: Apparently less than last year but this loss is undoubtedly deceptive as it was very difficult to diagnose with the extreme hot weather. Since it has become cooler, some fields that were apparently free from mosaic are showing it. (Lutman, August 27).
New Hampshire: Not nearly as abundant as last year. (Butler, August 1).
Massachusetts: Generally in fields planted with home-grown stock. Very severe in some cases, but generally not important where selected northern grown seed was used. (Osmun, August 1).
Connecticut: Probably less than usual. (Clinton, August 1).
Florida: Mosaic was prevalent in the Hastings section. In one field of 27 acres the yield was cut to about 20 barrels per acre. The seed came from Maine and was said to be certified. (Burger, July 1).
Arkansas: Very severe - as much as 70% of some fields are attacked. (Rosen, August 1).
Wisconsin: Much less than last year. There is also a remarkable scarcity of aphis. Triumph most severely injured as usual, one field Barron County

showed over 20% August 5. Disease much less noticeable in northeast sections of state. (Vaughan, August 1).

South Dakota: Did not see any except in experimental work. (Evans, August 1).

Colorado: This has been reported as quite prevalent in one section, but early to get definite reports. (Learn, August 1).

Montana: Probably most common and widespread of any of the diseases of potato found in Montana. Worse in Triumphs than any other variety. Significant control had by better growers and others who are using and growing certified stock. (Jennison, August 15).

Idaho: Potato mosaic is becoming of increasing importance each year in Idaho. Especially bad in northern Idaho this year. (Hungerford, August 1).

Washington: Present but extent is not known. (Heald, August 1).

California: Delta or Stockton, 3% average loss in eight fields examined. Southern California, spring crop 8% average infection, severe. (Milbrath, August 1).

Leaf roll (cause unknown).

Vermont: Would average a little more than last year but not over 5% of the entire plants of the state as an estimate. (Lutman, August 27).

New Hampshire: More abundant than last year. (Butler, August 1).

Connecticut: More or less seen but apparently of the dry weather type. (Clinton, August 1).

Massachusetts: Frequent and serious especially in fields planted with home-grown seed. (Osmun, August 1).

Pennsylvania: Continues to be our most important tuber-born disease. Field counts as high as 100% are frequent. (Thurston, August 1).

Indiana: Very serious in Lake County. (Gardner, August 1).

Wisconsin: No cases observed. (Vaughan, August 1).

South Dakota: Trace. (Evans, August 1).

Colorado: No report has been received thus far. (Learn, August 1).

Idaho: Fairly common in northern Idaho. (Hungerford, August 1).

Washington: Present, but extent not known. (Heald, August 1).

Fusarium wilt caused by Fusarium sp.

Vermont: Professor Gilbert reports occasional pronounced and severe cases. It has been unimportant for a number of years. (Lutman, August 27).

North Carolina: Found this year in the early crop and also the late crop in the mountains. Most destructive in the early crop. (Foster, August 1).

Indiana: Not a factor in the early crop. Already appearing in the late crop, even where seed was carefully sorted and cut to eliminate all tubers showing vascular discoloration. (Gardner, August 1).

Montana: Just beginning to manifest itself. Worse in certain districts than in others. Usual amount of damage expected. (Jennison, August 15).

California: Delta region - Evidence of several species active on basal stem and roots. Range of loss 10-70%. Average loss 15%. Delta acreage about 38,000 acres, main summer crop. (Milbrath, August 1).

Rhizoctonia caused by Rhizoctonia sp.

Vermont: Scattering throughout the state, but the attacks are not bad. (Lutman, August 27).

Indiana: Rather serious in the early crop. Attack comes early in the season and caused stunted plants or blanks in the rows. Typical lesions on the underground parts. (Gardner, August 1).

Colorado: This disease is quite prevalent in the potato section, especially the eastern. It is reported as serious in some fields in this section. It is also present on the western slope. (Learn, August 1).

Idaho: More destructive than usual in all potato sections of the state. (Hungerford August 1).

California: Very severe in Delta region. Lesions on basal stems and stolons prominent. Average loss 5-8%, average infection 70%. (Milbrath, August 1).

Montana: Quite common, especially in certain irrigated districts. Actual damage to crop this year small. (Jennison, August 15).

Washington: More generally reported than any other disease. It appears to have caused more loss than usual, especially in eastern Washington, since there has been a shortage of moisture. At this time many late potatoes are nearly dead. (Heald, August 1).

Tip burn and hopper burn.

Vermont: Severe attack, the worst we have ever had and in regions where it is usually very rare. This is not hopper injury as leaf hoppers are rare. With diligent search two or three per plant could have been found when the advance of the tip burn was at its height, about July 22. We may now have 25% per plant in Burlington, but the advance of the tip burn has practically ceased. Locally, the plants lost 50% of their foliage. In general, for the state, would estimate about 15%. (Lutman, August 27).

Connecticut: Next to prematuring, tip burn has been the most conspicuous potato trouble of the year. Due to quite variable weather, rainy days followed by bright, hot ones and unusual hot weather as a whole. (Clinton, August 1).

Massachusetts: General on early varieties and unsprayed fields. Green Mountains not seriously affected; Dibble's Russet practically not at all. (Osmun, August 1).

Ohio: Widespread and severe. Apparently no potato patches free. (Detmers, September 1).

Indiana: Very severe on early crop. (Gardner, August 1).

South Dakota: Very abundant. Killed vines in some cases. Has done great amount of damage in South Dakota, probably 15%. (Evans, August 1).

Prematuring.

The intense heat that has been experienced this summer was very detrimental to potatoes in those parts of the country where the higher temperatures obtained. The resulting injury, together with that from drought has been a most important factor in greatly reducing the prospects for a good crop.

Connecticut: The most serious trouble of potatoes so far was prematuring of early planted early varieties, especially those planted on light and leachy soils. The dry weather of June was too much for these fields coming at a time when tubers were forming rapidly. The rains of the last of June failed to save such fields, especially in New Haven County, and the vines went down suddenly as if by disease. The most badly injured fields had only half a crop. Late planted and late varieties not injured. (Clinton, August 1).

New Jersey: Season exceptionally dry, 60% of average yield. (Cook, September 1.)
Wisconsin: Intense heat and drought in June and July caused great injury to stand. Some fields that were planted shallow in mid-June have been abandoned, others half a stand. (Vaughan, August 1).

TOMATO

Leaf blight caused by Septoria lycopersici.

Massachusetts: Only one report. Causing serious injury in a single garden in Amherst. (Osmun, August 15).
Delaware: First reported August 10. Very prevalent in all fields. Serious infections locally where rainfall has been heavy. (Adams, August 15).
Virginia: General and severe as usual. (Fromme, August 15).
New Jersey: Abundant on early market crop. Just starting on canning house crop. (Cook, August 15).
Pennsylvania: Reports now coming in indicate that Septoria is very prevalent this year. Several severe cases have been noticed in Center County. Yield apparently not greatly reduced so far. (Thurston, August 15).
West Virginia: Particularly severe in the central and southern part of the state. (Giddings, August 15).
North Carolina: Common but not destructive this year. (Foster, August 15).
Kentucky: Not severe this season because of protracted drought. (Valleau, August 15).
Ohio: Leaf spot showed about normal beginnings of development where there were showers, but owing to dying of tomato plants from other causes, leaf spot diminished in development. For the later period, doubtless most plantings to the southward would be practically dead before the season of most severe leaf spot attack. The disease is generally prevalent in the southern part of the state. (Selby, August 15).
Arkansas: Very heavy infections during first half of growing period, possibly associated with the cool weather prevalent through April, May, and the beginning of June. (Rosen, August 15).
Texas: Very prevalent, 4% loss. (Taubenhaus, July 15).

Fusarium wilt caused by Fusarium lycopersici.

New Jersey: Present this year, area increasing. (Cook, August 15).
Delaware: First report July 15. Not prevalent in what few commercial fields set out this season. Generally prevalent in garden stands. (Adams, August 15).
Virginia: Reported from two home gardens in Lynchburg. (Fromme, August 15).
West Virginia: Quite general but only occasionally causing serious injury. (Giddings, August 15).
North Carolina: The most common and destructive disease on tomatoes in this state, being found wherever they are grown. (Foster, August 15).
Kentucky: Present, but extent of injury not known. (Valleau, August 15).
Ohio: This has developed in about normal seriousness and has evidently extended by infection of plants in beds and in new areas of infection. It appears that the wilt is increasing in seriousness and is nearing the condition which will require growing of plants in soil of beds or greenhouses

sterilized by some efficient method. The tomato crop of the season is under the average amount and has been marked by serious check and losses in the southern districts from other causes which have obscured the wilt disease. The Department of Botany is continuing its testing and breeding of Fusarium resistant strains of tomato. The success for the past season has been encouraging and gives promise of final strains which will grow in infected soil. (Selby, August 15)

Texas: Epidemic form especially in small gardens and back yards, 1% total loss for state. (Taubenhaus, July 15).

Bacterial blight caused by Bacillus solanacearum.

Virginia: Two reports to date - Oceana (Princess Anne County) and Galax (Carrol County). Severe injury in both cases. (Fromme, August 15).

North Carolina: Destructive in several counties this year and has been reported from the mountains to the edge of the coastal plains where this joins the Piedmont section. (Foster, August 15).

Florida: There was a slight amount throughout the state. In some fields around Gainesville there was a complete loss. (Burger, July 15).

Ohio: Has been reported rather less frequently than in previous seasons, while present to a limited extent in nearly all greenhouses where tomatoes are grown, it is less serious in general in the field plantings. (Selby, August 15).

Texas: Trace. Unimportant. (Taubenhaus, July 15).

Late blight caused by Phytophthora infestans.

As compared with last year tomato late blight seems to be rare thus far this season in the Appalachian Mountain districts from Maryland southward where it usually occurs. The scarcity of the disease is doubtless largely accounted for by the hot and somewhat dry season.

West Virginia: Not so prevalent and destructive as in 1920. It is, however, causing considerable injury in several sections. Reported only from the higher altitudes. (Giddings, August 15).

North Carolina: Very destructive in the mountain section when grown at elevation of above three thousand feet. (Foster, August 15).

Early blight caused by Macrosporium solani.

Massachusetts: Widespread and serious, causing much defoliation; rotting of fruit not observed. (Osmun, August 15).

Connecticut: No damage. Seen only in small amounts. (Clinton, August 15).

Delaware: First observed July 15. Very prevalent and in southern sections many fields seriously infected. (Adams, August 15).

New Jersey: Prevalent, not severe as yet. (Cook, August 15).

Virginia: Moderate in gardens at Blacksburg. (Fromme, August 15).

West Virginia: Quite general but very destructive in the Ohio Valley and western part of the state. (Giddings, August 15).

North Carolina: Common but not as destructive this year as in previous years, because of the dry season. (Foster, August 15).

Ohio: Early blight has appeared upon field tomatoes generally and has shown considerable development in the districts having moderate rainfall. These have been rather restricted portions of the state. In the larger portions it took on more often the form of dying of leaves from the margin ascribed more commonly to drouth. Apparently more referable to tipburn than to early blight. (Selby, August 15).

Florida: There was considerable amount of this disease and especially the nail-head rust. The disease was worse along the lower east coast. (Burger, July 15).

Texas: Very prevalent, 1% loss. (Taubenhaus, July 15).

Western Yellow blight (cause uncertain).

Idaho: The last two weeks of hot dry weather have been especially favorable for the development of this disease. Losses this year will evidently equal or exceed those of last year. (Hungerford, August 15).

Oregon: This disease is reported to be causing close to 50% loss in the region of The Dalles which is the main tomato growing area of the state. It is the one chief limiting factor to the successful production of tomatoes in that region. (McKay, August 15).

Washington: This disease is appearing with its usual severity in various parts of the state. (Dana, August 15).

Blossom end rot (non-parasitic).

Ohio: The collapse of early crops of tomatoes in southern Ohio from drouth breakdown has been most marked. In the Marietta district where the crop is grown by tying to sticks driven in the ground to permit cultivation and free passage through the rows the loss has been the most serious observed in several years. The ground is naturally sandy and easily dried out. The combination of the present season with low rainfall and extremely hot weather during July made an almost abrupt termination of the early field tomato crop of that district. The breakdown of the fruit showed, first, by the dying and blackening of more or less circular area at the blossom end. When such fruits reached premature change of color, like ripening, and were sometimes picked with a small spot upon them, secondary rots developed about the black area and the fruits softened by these decays. These became known as "leakers" in the baskets being shipped and brought the shipping season in effect to rather an abrupt end. The tomato vines of the field showed breakdown from this same drouth-high temperature period which was an unprofitable ending to most tomato plantings. Somewhat better results were reported from tomatoes planted at greater distances in which the vines were allowed to spread upon the ground, thus preventing apparently a considerable amount of drying out. (Selby, August 15.)

Idaho: Blossom end rot is becoming quite prevalent on dry land and where there is not enough irrigation water. (Hungerford, August 15).

Mosaic (cause unknown).

Oregon: Tomato mosaic occurred again this year in the greenhouses where it was so damaging last year and caused on the average a reduction of 50% in the

yield. Some beds were so badly damaged as to necessitate removal and replanting. Climatic conditions apparently determine the severity of the disease for tomatoes replanted in the same bed which had given excessive loss from mosaic without soil treatment and exposed to infection from nearby affected plants gave a fair crop. When planted side by side the Globe variety yielded a much better crop of tomatoes than did Bonny Best though both were affected by the disease. No report of the disease on tomatoes grown out of doors. (McKay, August 15).

Bacterial soft rot caused by undetermined bacteria.

Virginia: Bacterial soft rot of fruit causing 50% loss in home gardens at Blacksburg. (Fromme, August 15).

SWEET POTATO

The sweet potato crop as a whole is reported by the Bureau of Markets and Crop Estimates, August 25, as "growing nicely and a good yield is indicated."

Stem rot caused by Fusarium spp.

New Jersey: More severe than in 1920. (Cook, August 15).
Delaware: First observed August 10. Generally prevalent, yellowed and wilted vines showing conspicuously in many fields. Five to ten per cent infection. (Adams, August 15).
North Carolina: The most destructive disease of sweet potatoes in this state. This year we have had a large number of complaints from the potato sections mainly because they do not practice any system of seed treatment, selection, or rotation of crops. The loss in some fields will go as high as 50% of the crop. (Foster, August 15).
Florida: This disease showed up with about the same severity as last year. No exact data gathered. Some young plants showed this disease. (Burger, August 15).
Mississippi: Stem rot reports have been received again this season from several counties in various parts of the state. One grower in Lee County reports 30% infection in a field of 15 acres. On the whole, however, the disease has been reduced somewhat by urging the necessity of healthy seed, sanitary measures in the beds, and planting on non-infected land. (Neal, August 15).
Arkansas: Abundant in some localities - particularly bad on some sandy soil fields. (Rosen, August 15).

Black rot caused by Sphaeronema fimbriatum.

New Jersey: Abundant. (Cook, August 15).
Delaware: Initial stand in many fields cut down by early infection on sprouts. (Adams, August 15).
North Carolina: Nearly always found where sweet potatoes are grown. Only a few reports of its presence this year. (Foster, August 15).

South Carolina: Present. No data on prevalence or damage. (Ludwig, August 15).
Florida: The disease showed up in all parts of the state. The young plants this spring also showed considerable damage. No exact data on the loss has been ascertained. (Burger, August 15).
Mississippi: Black rot was present again as usual. However, the campaign for healthy seed stock which was conducted by the Experiment Station Extension forces and the State Plant Board earlier in the year has reduced to a surprising degree the amount of infection on the plants. The strict quarantine regulations of the State Plant Board is causing plant growers in and out of the state to make greater efforts to produce healthy plants. (Neal, August 15).
Arkansas: Heavy infection in fields set out with slips from diseased roots. Inspectors report fields where certified seed was used as free from disease. (Rosen, August 15).

Foot rot caused by Plenodomus destruens.

North Carolina: Known to be present in the sweet potato section but no definite reports available. (Foster, August 15).
Mississippi: Reported from Lamar and Chickasaw Counties. Damage slight. (Miles, August 15).
Florida: Specimens received. The severity in the state not known. (Burger, August 15).

Soil rot caused by Cystospora batata.

Delaware: First observed August 10. Heavy infection on soil planted continuously to sweet potatoes for ten or more years. Plants easily recognized by retarded growth and root system severely crippled. In some fields 100% of stand infected. (Adams, August 15).

Mosaic (cause unknown).

Arkansas: Present in a limited extent in almost every field inspected. (Statement from G. G. Becker, Chief Inspector, Arkansas Plant Board).(Rosen, August 15).

BEAN

Anthracnose caused by Colletotrichum lindemuthianum.

Reported on August 15 from Massachusetts, Virginia, West Virginia, North Carolina, Ohio, and Wisconsin. In none of these states was the disease said to be conspicuous and in the majority of them it was indicated that the disease was present in subnormal amounts.

Bacterial blight caused by Bacterium phaseoli.

Blight has been reported this season from a considerable number of states in the east, but in none of these is it said to be especially destructive.

Rust caused by Uromyces appendiculatus.

Rust is well established now in Virginia, West Virginia, and North Carolina on susceptible varieties according to collaborators in those states. Fromme reports that susceptible beans in Virginia are already showing considerable injury. The disease was also reported earlier in the season from Oregon and from Florida where it was common but not serious.

Mosaic (cause undetermined)

Virginia: Slight to moderate at Blacksburg. (Fromme, August 15).
North Carolina: Scattered reports and observations indicate this disease is making a fair headway in the state. (Foster, August 15).
Wisconsin: A few plants have been seen. Of little importance. (Vaughan, August 15).

Stem rot caused by various organisms.

Fusarium and Rhizoctonia were both reported as causing severe injury in a few cases in Massachusetts and several reports of stem rot were received by collaborators in North Carolina and West Virginia.

CANTALOUPE

Bacterial wilt caused by Bacillus tracheiphilus.

Four definite reports of the occurrence of bacterial wilt of this crop have been received.

Virginia: Only one complaint to date, Amelia County, July 16. (Fromme, August 15).
North Carolina: Fairly common and destructive in some sections in the state. (Foster, August 15).
Ohio: Losses this season in Ohio due to the wilt have been very considerable both as regards isolated local plantings and larger commercial enterprises as well. Excellent control, however, has been effected where adequate attention was given to the destruction of insect pests when the presence of both disease and insects are noted in time. As is usually the case, greatest losses have appeared when the plants were about half grown or younger. Comparatively slight evidence of the disease has been noted since the first of August. It is thought that the wilt disease has been fully as severe as last season. (Thomas, August 15).
Ohio: Wilt has been severe and losses heavy. (Clayton, August 15).

Anthracnose caused by Colletotrichum lagenarium.

Reported in the field from North Carolina. A carload of South Carolina honey dew melons arriving in Boston, August 2, showed 6% affected fruit.

Downy mildew caused by Pseudoperonospora cubensis.

Mississippi: Downy mildew was observed by the writer at the South Mississippi Experiment Station, Poplarville, in July. Appeared to be causing defoliation in a field of about three acres. Also observed on College Station farm. (Neal, August 15).

Leaf blight caused by Alternaria brassicae nigrescens,

Delaware: First observed August 9. In early planted fields infection not prevalent till crop was harvested. Fields in which crop is being picked now show heavy infection and will affect sizing up of melons. Control has been secured with Bordeaux mixture and Bordeaux dust. (Adams, August 15).

Fusarium rot caused by Fusarium sp.

This seems to be the most common decay of cantaloupes in transit, as reported by market inspectors thus far this season. Certain carloads of melons from Arkansas, California, Florida, and North Carolina were reported as showing more or less Fusarium.

Fungicide injury.

Delaware: Dusting for insects and leaf blight quite common with growers this season. Considerable burning of vines has been experienced as the result of a coarse application. Some fields appeared as infected with Fusarium wilt fungus. Vines recovered from injury, but the crop was at least two weeks later than usual. (Adams, August 15).

SUGAR CANE

Mosaic or mottling (cause undetermined).

Florida: There is considerable of this disease showing in the crop in the western part of the state. No exact data has been received as to the amount of severity. (Burger, August 15).

Mississippi: Mosaic found present in 111 properties. Properties inspected, about 600. Counties in which inspections have been made, 45. Counties in which infections have been found, 16. Counties in which infections occur at present, 12. List of counties in which infections occur at present: Harrison, George, Greene, Jackson, Lamar, Lauderdale, Marion, Pearl River, Pike, Stone, Hancock, and Warren. (Miles, August 15.

Red rot caused by Colletotrichum falcatum.

Florida: This disease was very severe in the northern part of the state. The yield in many fields has been cut down considerably. Those fields which obtained their seed from the vicinity of Hawthorne show more disease. In the vicinity of Hawthorne the disease is severe. (Burger, August 15).

PEANUT

Rust caused by Puccinia (Uredo) arachidis.

The following statement from O. F. Burger informs us of the collection of peanut rust in November of last year. This case was one where the rust was doing damage and indicates the possibilities of the disease becoming serious under Florida conditions.

> "On November 6, 1920, I received specimens of the peanut rust from S. W. Collins, Torrey Island, Florida. He said that there was a 50% loss from a 15 acre field. The seed was obtained from Morehaven, Florida. He also said no other fields were affected."

TOBACCO

Wild fire caused by Bacterium tobacum.

Pennsylvania: Wild fire was first found in Pennsylvania in tobacco seed beds in the vicinity of Lititz, Lancaster County, May 28, 1921. Investigation has proved that it was present in the same locality last year and has undoubtedly been there for some time though unrecognized and not reported. On August 19, 1921 Professor C. R. Orton conducted a survey of Lancaster County and found the disease widespread and generally prevalent throughout the county. A total of 35 farms scattered over the county were investigated and the disease found on all farms but two. These farms represent over 400 acres and about 75 acres were said by Orton to be severely infected, the loss running as high as 60%. Although infection was found in the seed beds it was not noticed in the field until after heavy rains which occurred during the first week in August. (Thurston, August 24).

Ohio: Wild fire is reported as quite generally prevalent and is causing marked injury to the tobacco crop in Clermont County, Some reports have been received of its occurrence in adjacent counties and to a limited extent in the Miami Valley. (Selby, September 1).

Root rot caused by Thielavia basicola.

Ohio: Root rot has been somewhat generally prevalent in the Miami Valley cigar tobacco district where the practice of steaming the soil beds to kill

out the root rot is quite generally followed and has proved successful. A severe drouth prevailed generally in the Miami Valley district, especially over southern Montgomery and Preble Counties, including adjacent districts. This drouth interfered so seriously with transplanting that many of the larger growing plants had to be discarded. Tests of seedlings on untreated bed at Germantown by True Houser, Assistant Botanist, showed marked resistance of the new Montgomery Seedleaf variety to this disease. One or two Spanish sorts are also resistant. Single test of seedling of root rot resistant strain received from Wisconsin showed serious infection by the disease. (Selby, September 1).

Drouth spotting caused by lack of moisture.

Ohio: Recent reports from the Germantown district indicate very marked spotting and drying up of tobacco leaves in this area, following the prolonged drouth. This is locally known as rust, but up to this time no organism of any kind has been developed as infecting these spots. The trouble has been much more serious than in previous seasons. (Selby, September 1).

Mosaic (cause undetermined).

Ohio: Delayed planting and hot dry weather since that time have contributed apparently to reduce the amount of mosaic in tobacco fields. Our data is very restricted. (Selby, September 1).

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